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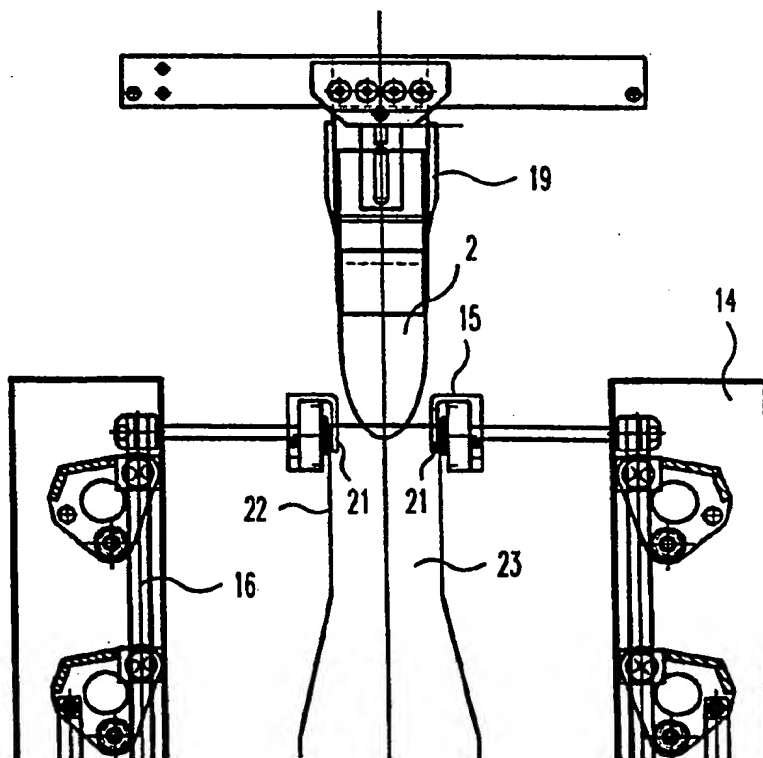
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>6</sup> : <b>B65B 43/26 // 1/18, 3/17</b></p>	<p><b>A1</b></p>	<p>(11) International Publication Number: <b>WO 96/01208</b> (43) International Publication Date: 18 January 1996 (18.01.96)</p>
<p>(21) International Application Number: PCT/DK95/00288 (22) International Filing Date: 5 July 1995 (05.07.95) (30) Priority Data: 0802/94 5 July 1994 (05.07.94) DK (71) Applicant (for all designated States except US): BATES EMBALLAGE A/S [DK/DK]; Stigsborgvej 36, DK-9400 Nørresundby (DK). (72) Inventor; and (75) Inventor/Applicant (for US only): HEJLESEN, Christian [DK/DK]; Heliosvej 28, DK-9210 Aalborg SØ (DK). (74) Agent: LARSEN &amp; BIRKEHOLM A/S; Østeraagade 25, DK-9000 Aalborg (DK).</p>		<p>(81) Designated States: AM, AT, AT (Utility model), AU, BB, BG, BR, BY, CA, CH, CN, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), TJ, TM, TT, UA, UG, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG).</p> <p>Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Danish).</p>

(54) Title: METHOD AND APPARATUS FOR MOVING A VALVE-SACK FROM A FILLING POSITION TO A CLOSING POSITION, AND A FILLING NOZZLE FOR USE IN CONNECTION WITH THE FILLING

(57) Abstract

An apparatus for the movement of a filled valve-sack from a filling position on a filling nozzle (2) to a closing position comprises two finger-shaped gripping elements (15) which can grip around that edge of the valve (23) which faces the nozzle (2) and on each side of the nozzle. The position of the valve can hereby be defined in a positive manner during the withdrawal of the sack from the nozzle and forward to that position in which the valve (23) is to be closed, e.g. by ultrasonic welding.



METHOD AND APPARATUS FOR MOVING A VALVE-SACK FROM A FILLING POSITION TO A CLOSING POSITION, AND A FILLING NOZZLE FOR USE IN CONNECTION WITH THE FILLING.

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BACKGROUND OF THE INVENTION

The invention relates to a method for moving a valve-sack from a filling position, where the sack's valve can be permanently sealed or closed, whereby the sack can be withdrawn from the filling nozzle and supported during its movement. The invention also relates to an apparatus for the execution of the method, comprising a movable support element arranged for a filled valve-sack which can move the valve-sack from a filling position, where the sack's valve is applied to a filling nozzle, to a closing position where the sack's valve can be permanently sealed or closed, and a filling nozzle for use in connection with the apparatus.

Such a method and apparatus are known from GB publication 21 68 671. With the known apparatus, the movable support element is built together with the filling nozzle. With the known method, the valve is held on the filling nozzle while at the same time the sack is tipped over into an inclined position, where the mouth of the valve points upwards at an angle. Thereafter, a further tipping of the sack takes place while the filling nozzle is held stationary until the valve is released from the nozzle.

With this known technique, the valve and the valve opening are not fixed in a positive manner during and after withdrawal from the filling nozzle. Uncertainty thus arises concerning the position of the valve when it is subsequently welded. Consequently, problems can arise with correct closing, and a certain percentage of the sacks are not closed correctly.

A similar and known technique is described in DE C1  
3,400,154, where after filling at a filling station the  
sack is withdrawn from the filling nozzle and thereafter  
5 moved sideways to a welding station where the welding is  
effected. Also here the valve can move during the transfer  
between the two stations, and the subsequent closing is un-  
reliable.

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## EXPLANATION OF THE INVENTION

The object of the invention is to provide a method and an  
apparatus whereby a positive control of the position of the  
15 valve can be effected between the filling position and the  
welding position, so that a greater reliability of the  
weldings is achieved.

This is achieved with a method whereby finger-shaped grip-  
20 ping elements in the filling position grip the walls of the  
valve in two substantially opposite places on each side of  
the filling nozzle, said gripping elements holding the wall  
of the valve until the sack is in the closing position, and  
moving away from each other when the valve is free of the  
25 filling nozzle.

The apparatus according to the invention is special in that  
the apparatus comprises two finger-shaped gripping elements  
which are mounted on control-arms, said control-arms being  
30 able to be moved in such a manner that the gripping ele-  
ments can be placed opposite each other on each side of the  
filling nozzle opposite the valve opening, introduced into  
the opening, grip the wall of the valve and move away from  
each other.

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The gripping elements are introduced into the valve from

the open side while the sack sits on the filling nozzle. The side walls of the valve are thus under control when the valve is withdrawn from the filling nozzle, possibly during the transfer of the sack itself. When the valve is free of the filling nozzle, the gripping elements are drawn away from each other and the originally cylindrical valve opening is hereby made flat. In this condition, it is possible to effect a very precise positioning of the closing elements, e.g. in the form of ultrasonic welding equipment or a glueing apparatus, in relation to the valve.

The filling nozzle according to the invention is provided with two pairs of ribs which lie opposite one another and which extend in the longitudinal direction of the nozzle. The finger-shaped gripping elements can be inserted in the space which is formed by the ribs between the nozzle and the wall of the valve, and the insertion is therefore effected with greater certainty.

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## THE DRAWING

Example embodiments of the invention will now be described in more detail with reference to the drawing, where

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figs. 1-3 show a filling station for a valve-sack seen from the side in three different operational steps,

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figs. 4a-b schematically show the positioning of the gripping elements in relation to the filling nozzle, and a valve-sack mounted in the start position, seen from the front and from above respectively,

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figs. 5a-b show the same, but where the gripping elements are in engagement with the wall of the valve,

figs. 6a-b show the same as in fig. 5, but where the valve is withdrawn from the filling nozzle,

5 figs. 7a-b show the same as in fig. 6, but where the gripping elements are drawn away from each other and the valve is drawn flat, and

10 fig. 8 shows a section through an apron containing a control arm and a clamping jaw in the apparatus.

#### DESCRIPTION OF THE EMBODIMENTS

15 It is preferred that the filling station is configured as shown in the drawing. A filling apparatus 1 with filling nozzle 2 is applied to valve-sack 3 by means of a commonly-known sack handling apparatus 4.

20 During the filling, the sack hangs on the nozzle 2, but is hereafter removed by an apparatus 5 according to the invention. The apparatus 5 consists of a base-frame 6 which stands on the floor 7 and contains a not-shown drive and control unit. With the arms 8a-b, 9 and 10, a parallel-arm control arrangement is formed for a console 11 which is  
25 tipped around a horizontal axis by means of the arm 10 which comprises a compressed-air cylinder. Both of the arms 8b and 9 are kinematically connected with gears inside the box 12, whereby they can move symmetrically around a vertical plane through the box 12.

30 A commonly-known ultrasonic welding apparatus 18 is secured to the frame 6 in a manner not shown.

35 The console 11 has a grid-shaped bottom 13 which can swing in under a valve-sack 3. The console 11 also has two parallel aprons 14 which contain gripping elements or clamping

jaws 15. The clamping jaws are operated by compressed air and are mounted on the end of control arms 16, the configuration and suspension of which is shown in fig. 8. Each of the clamping jaws 15 has a fixed, hook-shaped finger 21 and a compressed-air piston 30 which can clamp the wall 22 of the valve-sack against the finger 21. In the example shown, three compressed-air cylinders 25, 26 and 27 are used in the manoeuvring of the arm 16, partly by swinging of a pivotable link 28.

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The filling nozzle 2 is provided with two pairs of longitudinal ribs 19, which with regard to the use of nozzles of different sizes are secured to an annular sleeve 20. Between the ribs 19 there is room for the introduction of the clamping jaw fingers 21 between the wall 22 of the valve and the filling nozzle 2.

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With the method according to the invention, the console 11 is fed in towards the filled sack 3, which by the sack valve 23 hangs with its weight on the nozzle 2 until the aprons 14 are standing on each side of the sack 3 along the valve 17, see figs. 1 and 4a-b. The bottom 13 is swung into the horizontal position, whereby the sack 3 is supported by the console 11.

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Hereafter, the arms 16 with the clamping jaws 15 are fed towards each other and moved in behind the opening of the sack valve. Thereafter, the arms 16 are drawn back so that the fingers 21 of the clamping jaws engage with the wall 22 of the valve, see figs. 5a-b. The clamping jaws 15 are now activated so that the wall 22 of the valve is held.

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In this position, the whole of the console 11 is fed back, whereby the sack and its valve are withdrawn from the nozzle 2, see figs. 6a-b. The arms 16 are now drawn away from each other, whereby the valve opening, which was ori-

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ginally cylindrical, is drawn flat and almost closed. The console 11 is now tipped, see the right-hand half of fig. 2, whereby the valve opening is placed in a position at the welding apparatus 18. Hereafter, the welding of the valve 23 is carried out at a distance from the opening and behind that place where the wall 22 of the valve is held by the clamping jaws 15.

When the valve 23 has been closed by welding, the console 11 is tipped back again to the start position and the clamping jaws 15 are drawn out of the valve opening. By swinging of the bottom 13, the sack 3 is now released for removal on a conveyor belt 24.

In this way, that part of the valve which is to be closed is under positive control during the whole of the process forward to the place where the welding is to be effected.

## C L A I M S

1. Method for the moving of a valve-sack from a filling position, where the valve of the sack is applied to a filling nozzle, to a closing position where the sack's valve can be sealed or permanently closed, and whereby the sack is withdrawn from the filling nozzle and supported during its movement, characterized in that finger-shaped gripping elements in the filling position grip the wall of the valve in two substantially opposite places on each side of the filling nozzle until the sack is in the closing position, and are moved away from each other when the valve is free of the filling nozzle.
2. Apparatus for the execution of the method according to claim 1, and comprising a movable support element arranged for a filled valve-sack which can move the valve-sack from a filling position, where the valve of the sack is applied to a filling nozzle, to a closing position where the valve can be sealed or permanently closed, characterized in that the apparatus comprises two finger-shaped gripping elements which are mounted on control arms, said control arms being able to move so that the gripping elements can be positioned opposite each other on each side of the filling nozzle opposite the opening of the valve, introduced into the opening, grip the wall of the valve and move away from each other.
3. Apparatus according to claim 2, characterized in that the control arms for the gripping elements are mounted on retaining arms which are provided with elements for the activation of the feeding arms.
4. Filling nozzle for use in the filling of a valve-sack and in connection with the apparatus according to claim 2, characterized in that on the filling nozzle



there are provided two pairs of ribs, said ribs lying opposite each other and extending in the longitudinal direction of the nozzle.

5. Filling nozzle according to claim 4, characterized in that the height of the ribs increases in the direction away from the discharge opening of the nozzle.
6. Filling nozzle according to claim 4 or 5, characterized in that the ribs are provided on a sleeve which is mounted on the filling nozzle.

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Fig. 1

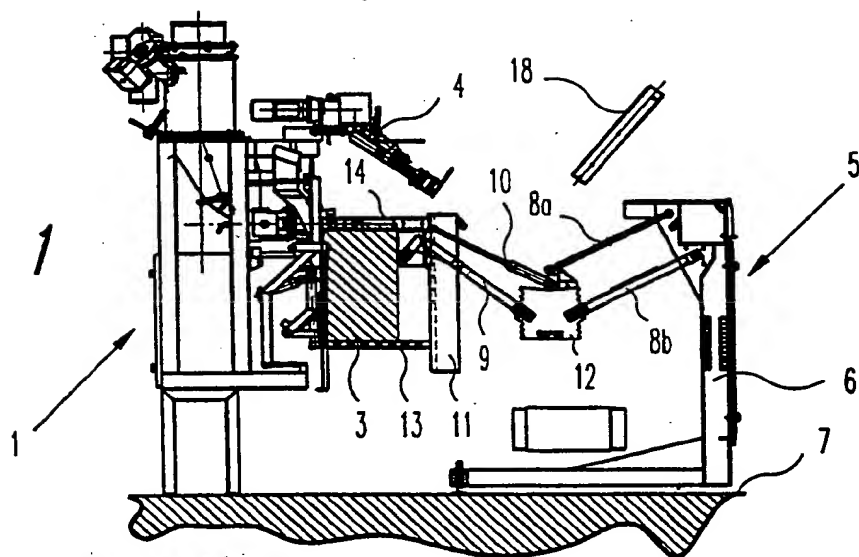


Fig. 2

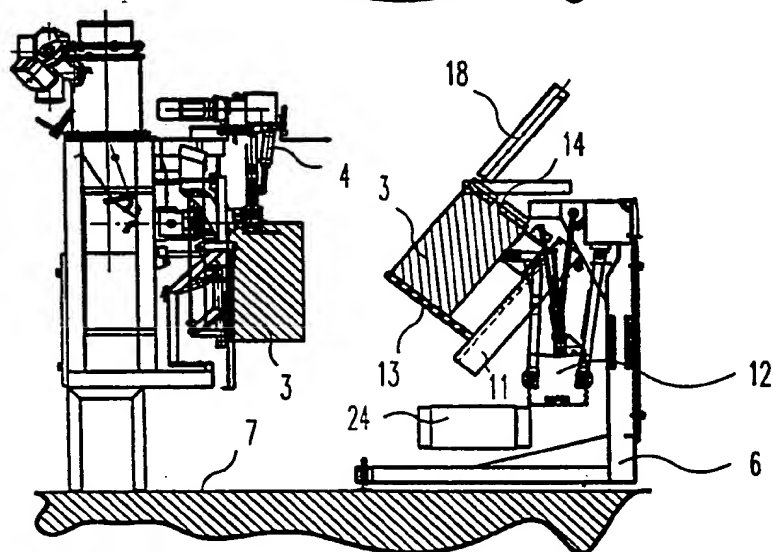
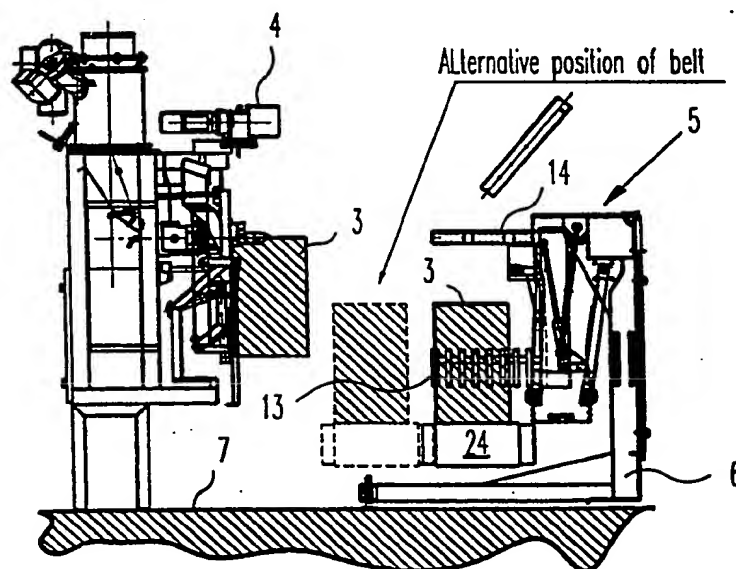


Fig. 3



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Fig. 4a

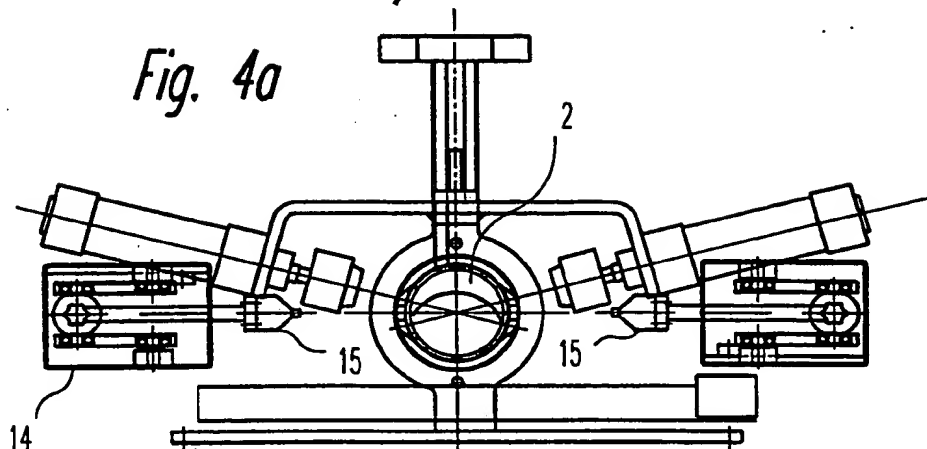
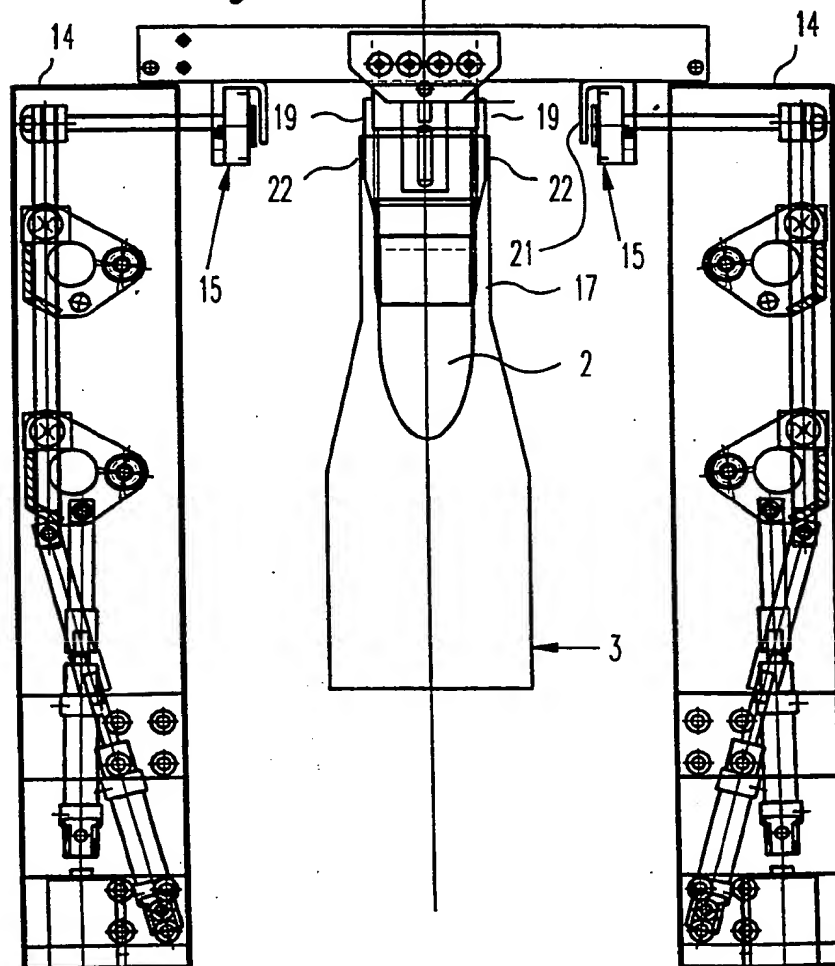


Fig. 4b



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Fig. 5a

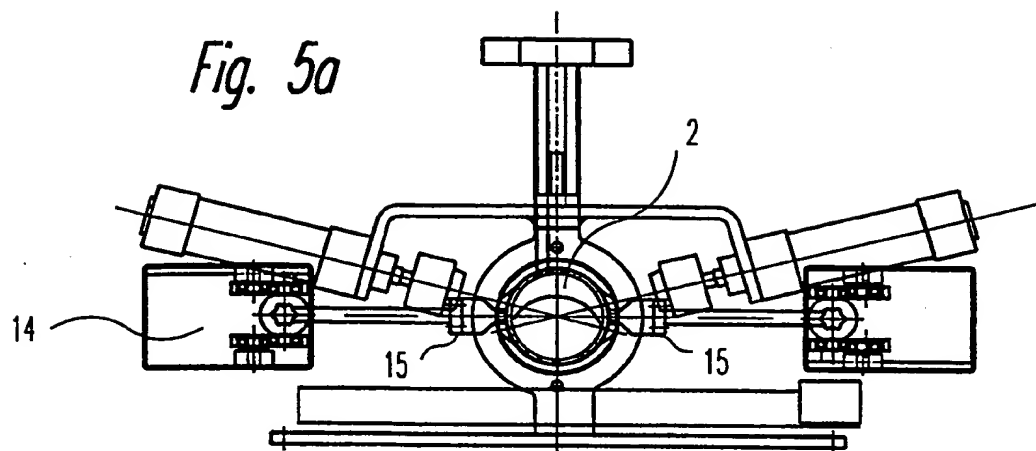
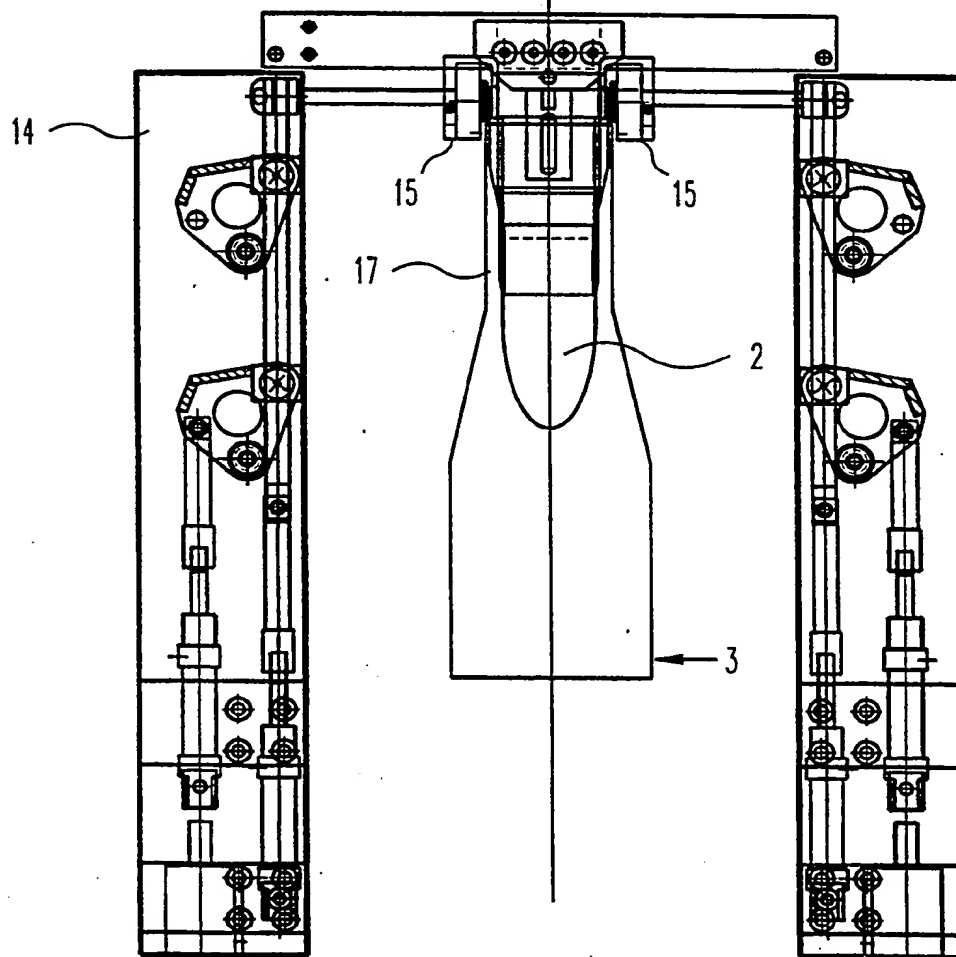


Fig. 5b



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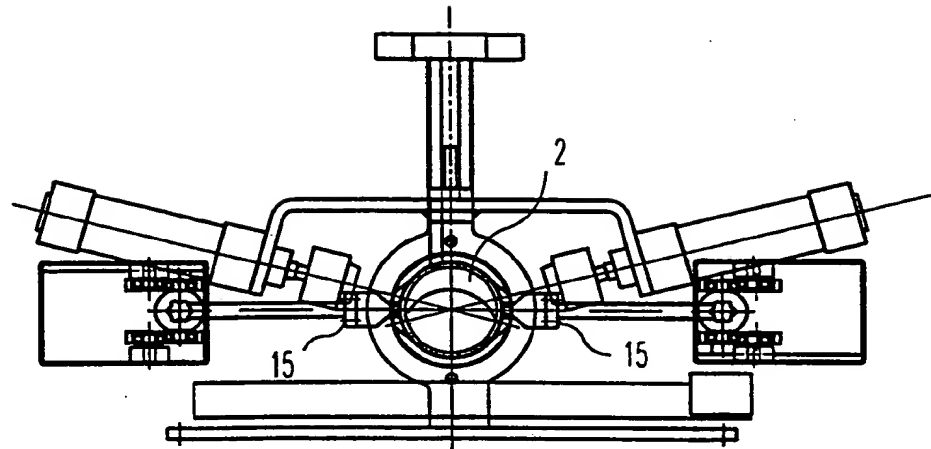


Fig. 6a

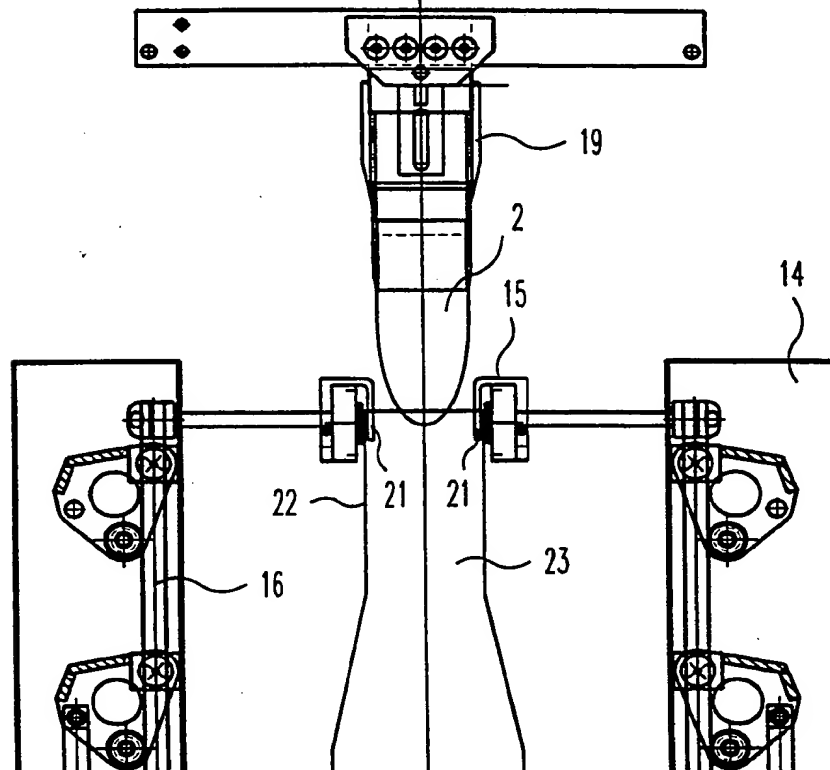
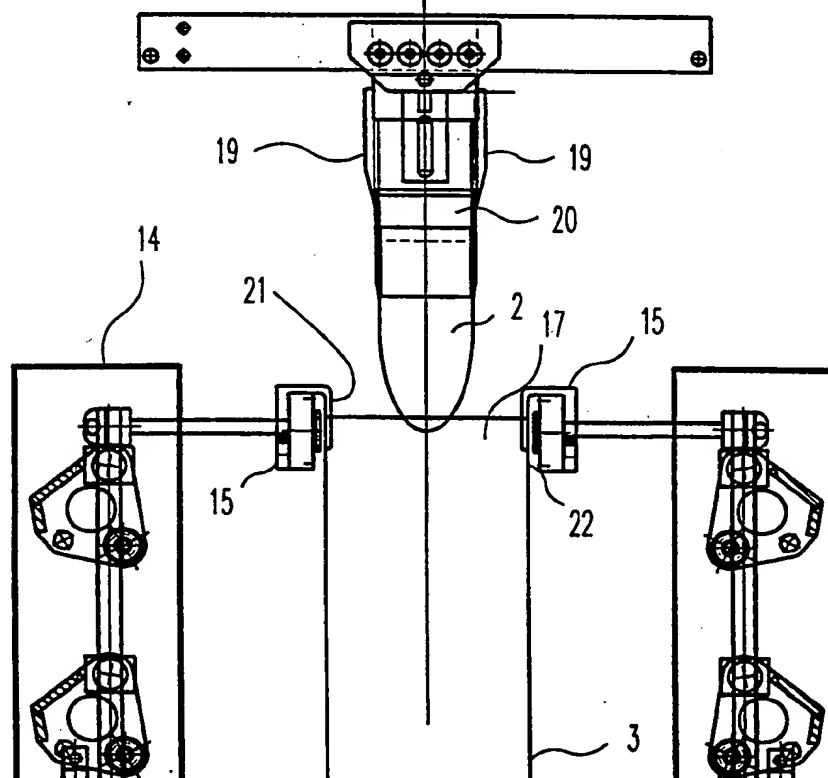
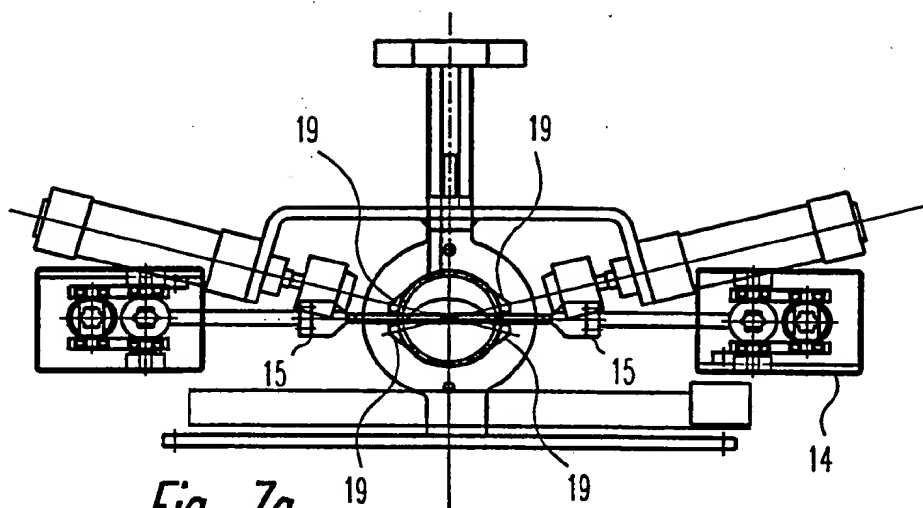


Fig. 6b

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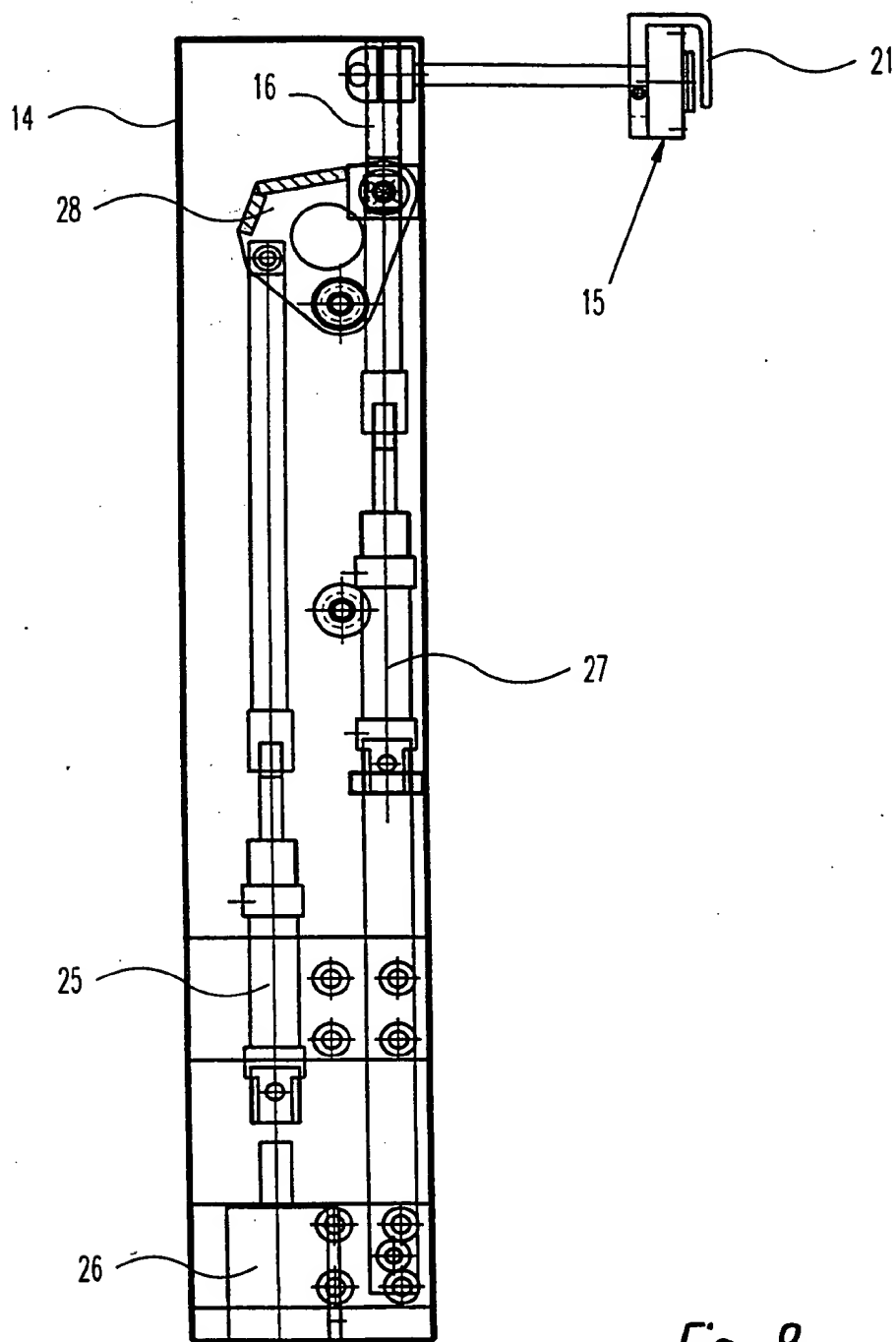


Fig. 8

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 95/00288

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B65B 43/26 // B65B 1/18, B65B 3/17

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 4873816 A (MITTELBACH), 17 October 1989 (17.10.89), column 4, line 27 - column 5, line 13, figure 2, details 9-11 --	1-6
X	US 3952479 A (ACHELPOHL), 27 April 1976 (27.04.76), column 4, line 37 - line 46, figures 2,4, details 59,60 --	1-6

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

6 November 1995

Date of mailing of the international search report

07-11-1995

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 95/00288

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

02/10/95

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